

Application No. 10/519,261
Paper Dated: April 16, 2008
Attorney Docket No. 4385-045944

AMENDMENTS TO THE DRAWINGS

The attached drawing sheets include a change to Fig 1. The replacement sheet, which includes Fig. 1, replaces the original sheet including Fig. 1. Fig. 1 has been amended to include reference to “E11”, which is referred to in the specification on line 20 of page 6. The change incorporated in the replacement sheet is indicated with quotes and circled on the attached annotated copy of the original sheet.

Attachment: Replacement Sheet
Annotated Sheet Showing Changes

REMARKS

The Office Action of December 20, 2007 has been reviewed and the comments therein have been carefully considered. Independent claim 22 has been amended so as to further clarify that the heating means provide support to the flow of waste water through the chamber. Claims 22 and 26-28 have also been amended to address the allegations of indefiniteness advanced in the Office Action. The specification has been amended to correct two typographical errors. Finally, a corrected drawing sheet containing an amended version of Fig. 1 has been submitted as requested in the Office Action. No new matter is added by this Amendment. Accordingly, claims 22-28 are currently pending in this application and are believed to be in condition for allowance.

The present invention is directed to a method of purifying melamine-containing waste water. The method uses a device with a container through which the waste water to be purified flows. The device includes a plurality of parallel flow guide means. The flow guide means alternate between an overflow weir and an underflow weir. This arrangement provides a chamber in the device where the waste water flows in a meander-shaped fashion through the container. The device also includes at least one heating means. The heating means is arranged between two of the flow guide means in a lower part of the chamber of the container at the beginning of a rising flow. The method comprises producing a supported flow in the chamber and setting the temperature in the device to a value that is, in one embodiment, greater than about 190°C. In another embodiment, the temperature in the device is between 220°C and 230°C. In another embodiment, the pressure in the device is between 30 and 100 bar. In yet another embodiment, the pressure in the device is between 30 and 60 bar. The heating device provides support to the flow of waste water through the chamber.

In the Office Action, the disclosure was objected to because “the relief valve V8” on page 6, line 1 and “E11” on page 6, line 20 were not labeled in Fig. 1. Applicants submit herewith a corrected version of Fig. 1 on which “E11” is labeled in accordance with the description in the specification. Applicants have also amended the language previously appearing on page 6, line 1 so that the specification correctly refers to the relief valve as “V6”

rather than "V8". Because V6 is properly labeled in Fig. 1, this amendment fully addresses the objection.

Claims 22-28 stand rejected under 35 U.S.C. § 112, second paragraph for indefiniteness. Specifically, with respect to claim 22, it was alleged that the language "at least one flow guide means" is inconsistent with the later phrase "between two flow guide means". In response, Applicants have amended the "at least one flow guide means" language to read "a plurality of flow guide means". This amendment is intended to clarify that the device includes more than one flow guide means, such as shown in Fig. 2a. With respect to claim 26, Applicants have amended the language "at least one" to read "at least once". In claims 26-28, Applicants have changed the phrase "the hydrolyzer" to "the device" and "the head product" to "a head product" to address the allegation that "the hydrolyzer" and "the head product" lacked proper antecedent basis. In light of these amendments, Applicants request reconsideration and withdrawal of the rejection of claims 22-28 under 35 U.S.C. § 112, second paragraph.

In the Office Action, claims 22-27 were rejected as being obvious and unpatentable under 35 U.S.C. § 103(a) over Berkowitz et al. (U.S. Pat. No. 4,013,757) in view of Granelli (U.S. Pat. No. 5,096,599). Claim 28 was rejected as being obvious and unpatentable under 35 U.S.C. § 103(a) over Berkowitz in view of Granelli and further in view of Vasan et al. (U.S. Pat. No. 2,992,703). However, in light of the current amendments and remarks, Applicants respectfully request that these rejections be withdrawn.

In the Office Action, it is asserted that Berkowitz discloses a method of purifying melamine-containing waste water substantially in accordance with the claims except for the requirement that the waste water flow through a device like that recited in the claims at a specific temperature. Granelli is then cited as teaching that it is known in the art to utilize a device having multiple baffles and a heating device to aid in hydrolyzing an effluent from a urea production plant and that one skilled in the art would find it obvious to employ the device of Granelli in the method of Berkowitz. The Office Action also asserts that the specific temperature and pressure values appearing in the claims amount to simply a matter of process optimization, obvious to one skilled in the art. With respect to claim 28, the

Office Action asserts that Vasan, in combination with the above references, renders obvious the additional step of directing the head product to a gas washer.

However, Applicants, in claim 22, have now clarified that the heating means of the device is arranged so as to support the flow of the waste water through the chamber of the device. The heating means of the device is arranged between two flow guide means at the beginning of a rising flow. This arrangement provides support for the flow of the waste water as it navigates its way through the chamber of the device in a meandering fashion. Heat is transferred from the heating means to the surrounding waste water by convection. This heat transfer is most intense to that waste water that is closest to the surface of the heating means. Once the waste water nearest the surface of the heating means is heated, it begins to naturally rise relative to the other, unheated waste water that has yet to flow past the surface of the heating means. In this sense, Applicants have discovered that the heating means can provide a sort of convective flow support to the waste water as it flows through the device. More specifically, the flow in the upwardly direction, towards the top of an overflow weir, is enhanced by positioning the heating means near the beginning of a rising flow portion in the chamber.

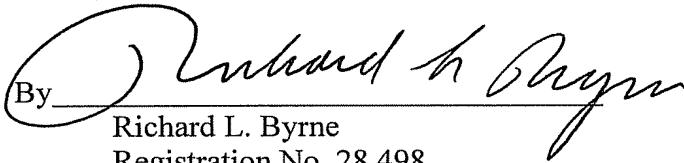
This arrangement of the heating means recited in claim 22 is not taught in or suggested by any of the cited references. In fact, Granelli actually teaches away from such an arrangement. As seen in Figure 2, Granelli's hydrolyzer (12) includes steam feed lines (21) disposed at a point where the waste water is still in a downward flow, which is distinguishable from Applicants' arrangement where the heating means is disposed at the beginning of a rising flow. As explained above, this is an important and significant distinction. According to Granelli's arrangement, the waste water flowing through the device would have to work against the convective flow generated by the steam feed lines to flow in a meandering fashion through the hydrolyzer. This is simply not the case in Applicants' design where the heating means provide support, as opposed to resistance, to the pattern of waste water flow through the device.

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For all of the foregoing reasons, Applicants submit that pending claims 22-28 are patentable over the cited documents and are in condition for allowance. Accordingly, reconsideration of the rejections and objections, approval of the corrected drawings and allowance of pending claims 22-28 are respectfully requested.

Respectfully submitted,

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